CHAPTER EIGHT

Pollution Prevention, Recycling, Toxics & Waste

Pollution prevention generally refers to preventing or reducing waste where it originates, at the source. It can involve a wide variety of practices, including practices that conserve natural resources by reducing or eliminating pollutants through increased efficiency in the use of raw materials, energy, water, and land.

The goal of source reduction is to prevent the creation of waste, either by reducing the quantity of materials, reusing materials already manufactured, lengthening the life of products to postpone disposal, or managing nonproduct organic wastes through onsite composting or other alternatives to disposal.

Many creative new approaches are under way to promote source reduction and recycling. For example, regulatory measures can be used to mandate or encourage reduced wastes. Many states have adopted bans on the disposal of specific materials, such as vehicle batteries and tires.

Most of the future growth in solid waste generation will be handled through recovery for recycling or composting programs. In 1996, recovery accounted for 57 million tons—over a quarter of all solid waste generated that year.

Many companies are discovering that pollution prevention programs can help lower their operating costs. As part of a legal settlement with EPA, a DuPont plant in New Jersey identified 15 manufacturing processes with pollution prevention potential. The projects focused on reducing solvent waste, tar waste, and other chemical waste. Once all projects are in place, DuPont expects that waste from all 15 processes will be cut roughly in half. DuPont anticipates annual savings of about $15 million, more than twice its upfront investment.

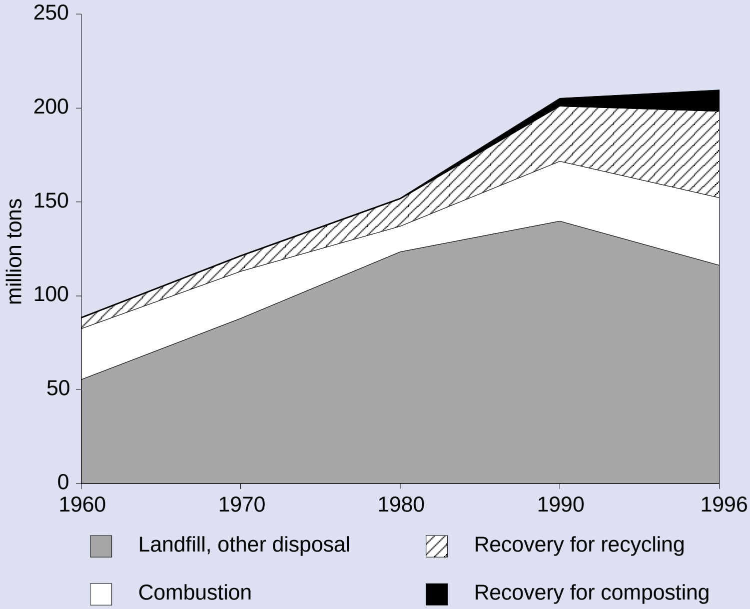
TRENDS

Municipal Solid Waste Trends

Gross solid waste generation continued to grow over the 1990-96 period, but strong growth in recovery for recycling and composting led to a decline in discards to landfills (Figure 8.1). (Part III, Table 8.1)

Over the past 25 years, the American public has increasingly made recycling a societal priority. The United States now diverts about 27 percent of all discarded materials for recycling, up from 17 percent in 1990. About 25 percent of all paper (41

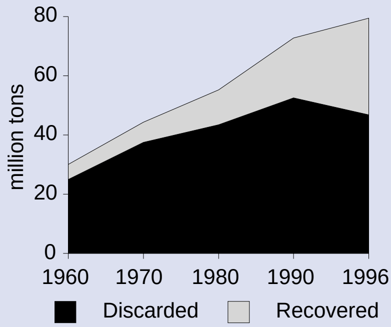
Figure 8.1 U.S. Municipal Solid Waste Management, 1960-1996



Source: See Part III, Table 8.1.

percent including paper and paperboard) is now recycled (Figure 8.2), as are 58 percent of all steel cans, 63 percent of aluminum drink cans, and 62 percent of major appliances. Although the recycling of commercial and industrial secondary materials in the U.S. has occurred in the private sector for well over 100 years, 20 years ago there was just one multimaterial curbside recycling program. Today such service is provided to some 140 million Americans living in 9,000 communities (Figure 8.3).

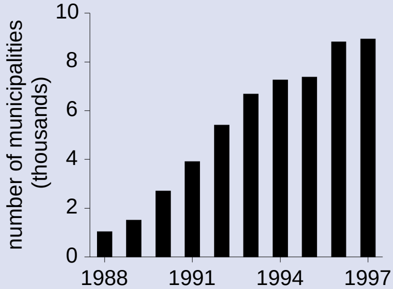
Figure 8.2 Paper and Paperboard Waste, 1960-1996



Source: See Part III, Table 8.2.

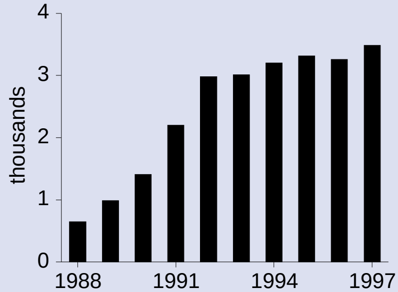
Additional significant gains have been made in composting of yard trimmings (Figure 8.4). Over the 1990-96 period, yard waste generation declined from 35 to 29.75 million tons, while recovery increased from 4.2 to 10.8 million tons. Recovery programs for metals also showed strong growth, climbing from 3.3 to 5.3 million tons over the 1990-96

Figure 8.3 U.S. Participation in Curbside Recycling, 1988-1997



Source: Glenn, J., "The State of Garbage in America, Part I," *BioCycle* (April 1998).

Figure 8.4 U.S. Yard Trimmings Facilities, 1988-1997



Source: Glenn, J., "The State of Garbage in America, Part I," *BioCycle* (April 1998).

period while generation of metals waste remained at about 13 million tons.

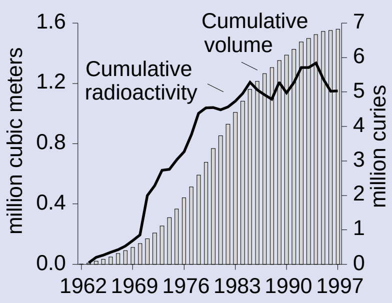
For other waste types, including plastics, rubber, textiles, and wood, recovery programs remain a relatively small percentage of total waste generation. In the case of plastics, for example, total waste generation in 1996 was 19.7 million tons, while only about 1 million tons was recovered. (Part III, Table 8.2)

Nuclear Waste

The annual amount of commercial low-level nuclear waste (LLW) shipped for disposal grew steadily from 1960 to 1980, reaching a peak of 92,400 cubic meters. Since 1980, the annual amount shipped for disposal declined to about 9,000 cubic meters in 1997. Since 1960, a cumulative total of 1.56 million cubic meters of commercial LLW has been shipped for disposal. (Figure 8.5) (Part III, Table 8.3)

Commercial LLW is generally divided into five categories: academic, government, industrial, medical, and utility. The academic category includes university hospitals and university medical and nonmedical research facilities. The government category includes state and non-DOE federal agencies. The industrial category is comprised of private entities such as R&D companies, manufacturers, nondestructive-testing operations, mining

Figure 8.5 U.S. Inventory of Low-Level Nuclear Waste, 1962-1997



Source: See Part III, Table 8.3.
Note: Cumulative radioactivity includes decay.
Data reflect commercial low-level nuclear waste only.

works, fuel fabrication facilities, and radiopharmaceutical manufacturers. The medical category includes hospitals and clinics, research facilities, and private medical offices. The utility category includes commercial nuclear reactors. Disposal of LLW at commercial sites accounted for about 32 percent by volume of all LLW disposed at end of fiscal year 1996.

The majority of LLW is generated by DOE through its defense activities, naval nuclear propulsion program, and various research and development (R&D) activities. To date, DOE has disposed of about 1.3 million cubic meters. The annual trend in waste disposal has paralleled the commercial sector, reaching a peak in 1987 of 154,000 cubic meters and then declining to about 40,000 cubic meters in 1997. While the majority of LLW waste disposal is from DOE, the rate of generation of LLW from routine DOE operations (excluding disposal of contaminated material from environmental restoration activities) has decreased by 60 percent between 1993 and 1997.

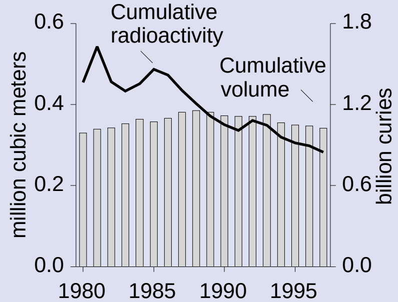
In 1997, the U.S. inventory of high-level nuclear waste (HLW) was estimated to be 341,700 cubic meters (Figure 8.6). (Part III, Table 8.4) HLW is generated by the chemical reprocessing of irradiated targets, naval propulsion fuel, and spent reactor fuel (although chemical reprocessing has been phased out except when needed to reprocess deteriorating spent nuclear fuel). HLW exists in a variety of physical or chemical forms (alkaline or acidic, supernatant liquid, sludge, salt cake, calcine solid, etc.), all of which must be stored to safely protect the environment and the health of workers and of the public. Most of the current U.S. inventory of HLW has resulted from DOE activities and is stored at DOE facilities in South Carolina, Idaho, and Washington.

The cumulative totals of commercial spent nuclear fuel are continuing to grow for all reactor types associated with nuclear electric power generation. The cumulative total of spent fuel for boiling-water and pressurized-water reactors increased from 31,952 metric tons in 1995 to 34,252 metric tons in 1996 (Figure 8.7). (Part III, Table 8.5) In addition, there was an estimated 2,483 metric tons of spent nuclear fuel from government (primarily DOE) and university reactors. Though currently in storage at numerous commercial and DOE sites, this fuel will ultimately require geologic disposal.

Toxic Releases

Onsite releases of toxic substances tracked by EPA's *Toxics Release Inventory*

Figure 8.6 U.S. Inventory of High-Level Nuclear Waste, 1980-1997

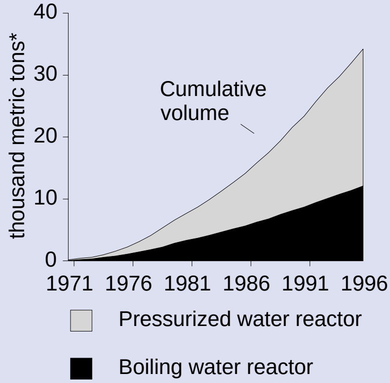


Source: See Part III, Table 8.4.
Note: Cumulative radioactivity includes decay.

(TRI) have declined dramatically since 1988 (Figure 8.8). For example, onsite releases of air toxics have dropped almost 50 percent, from an estimated 2.18 billion pounds in 1988 to 1.095 billion pounds in 1996. Surface water releases have declined by 72 percent and land releases by 34 percent over the same period. All told, onsite releases have dropped by about 48 percent during the 1988-96 period. (Part III, Table 8.6) These reductions are due to both real changes in the amount of TRI chemicals released or otherwise managed and to "paper" changes that reflect changes in estimation or calculation techniques or reporting instructions. Real changes are usually brought about by source reduction, pollution control, and production changes, generally in response to market forces or government programs. One-time events such as accidental releases or clean-up activities can cause real but anomalous increases in the reporting year.

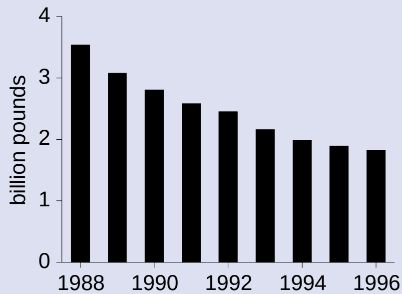
Many industries have cut their onsite and offsite releases of toxics by more than half during the 1988-96 period, including tobacco (-78.5 percent), textiles (-57.3 percent), printing (-53.8 percent), chemicals (-51 percent), leather (-70.7 percent), fabricated metals (-51.6 percent), machinery (-72.5 percent), and electrical equipment (-74.6 percent). (Part III, Table 8.7) Reporting by the chemical industry, which by definition produces chemicals or manufactures products by processing chemicals, dominates most categories of TRI chemicals, followed by primary metals and producers of pulp, paper, and paper products. In 1996, the chemical industry reported the largest totals in air emissions, surface water discharges, and onsite underground injection, while primary metals reported the largest amounts of onsite land releases and offsite transfers (Figure 8.9).

Figure 8.7 U.S. Inventory of Spent Nuclear Fuel by Type of Reactor, 1971-1996



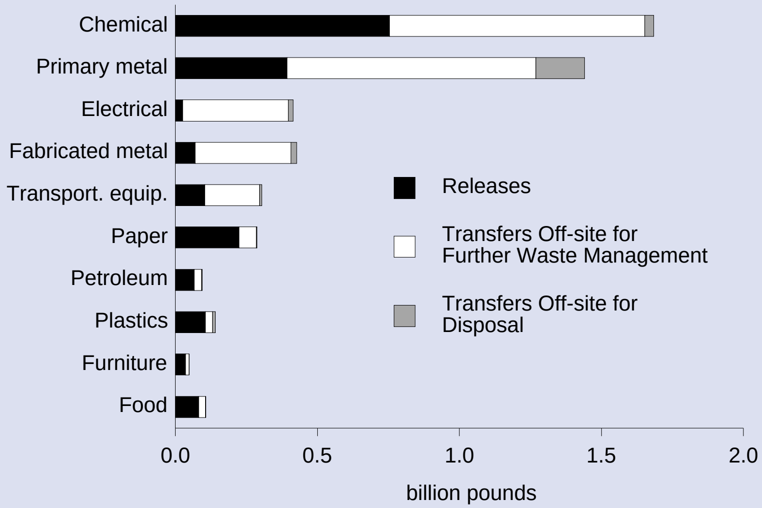
Source: See Part III, Table 8.5.
Note: * Refers to initial heavy metal.

Figure 8.8 U.S. Trends in Toxics Releases, 1988-1996



Source: See Source for Part III, Table 8.6.
Note: Data are standardized to account for changes in reporting requirements.

Figure 8.9 Toxics Releases and Transfers by Selected U.S. Industries, 1996



Source: See Part III, Table 8.7.
Note: Data are from EPA's Toxics Release Inventory. Transfers off-site for further waste management includes transfers to recycling, energy recovery, and various types of treatment.

By state, reductions in onsite and off-site releases averaged 45 percent during the 1988-96 period (Figure 8.10). Many states have cut releases by more than 70 percent in this period, including California, Colorado, Connecticut, Delaware, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Vermont, and Wyoming. (Part III, Table 8.8)

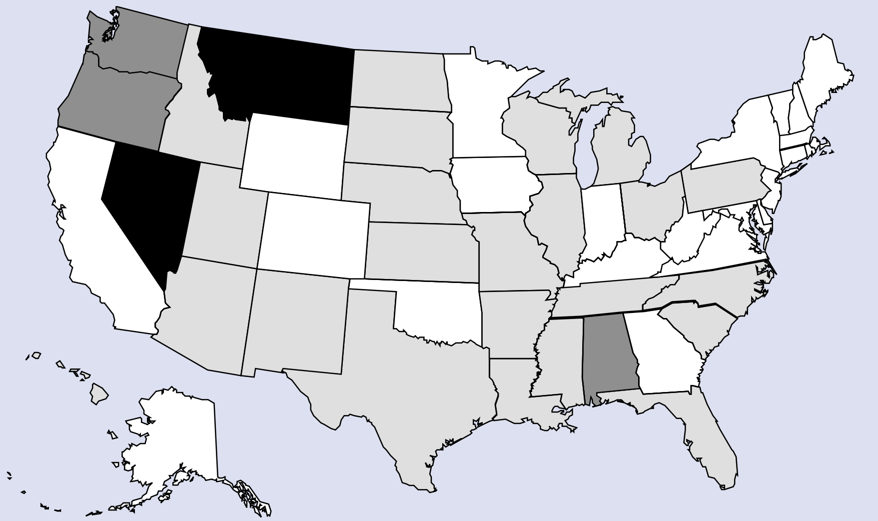
Superfund Inventory and NPL Sites

From its inception in 1980, the number of hazardous waste sites in the Superfund inventory grew steadily, peaking at over 39,000 sites in 1994 and over 1,300 sites on the National Priority List. By the end of 1995, EPA had shortened the list by removing over 24,000 low-priority sites, leaving 15,622 in the inventory. The inventory was reduced further to 12,781 in 1996. Sites on the National Priority List also began to decline, dropping from a high of 1,374 in 1995 to 1,194 in 1997. (Figure 8.11) (Part III, Table 8.9)

Contaminants in Fish and Wildlife

Rachel Carson's *Silent Spring*, published in 1962, focused worldwide attention on the potential for dichlorodiphenyl trichloroethane (DDT) and other contaminants to persist in the environment and harm fish and wildlife. The United States and Canada responded by establishing programs to monitor the concentrations

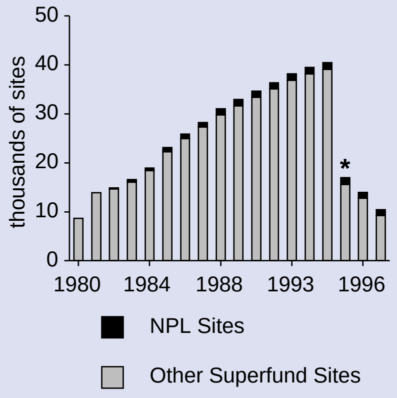
Figure 8.10 Percent Change in Toxic Releases by State, 1988-1996



Source: U.S. Environmental Protection Agency, *1996 Toxics Release Inventory: Public Data Release* (EPA, Washington, DC, 1998).

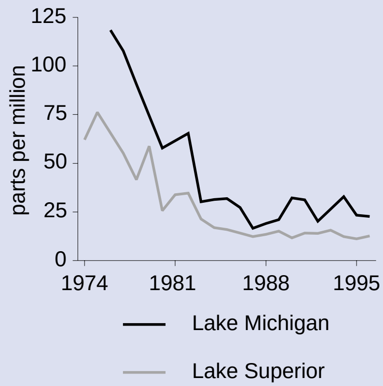
of long-lived toxic contaminants in all segments of the environment, and eventually restricted or banned their manufacture and use. Fish and fish-eating birds were selected for monitoring aquatic ecosystems because of their tendency to accumulate pesticides and other contaminants. The European starling was selected for monitoring contaminant levels in terrestrial habitats because of its varied diet and wide geographic distribution. The wings of ducks killed by hunters were used to monitor contaminants in duck populations of the major flyways and to provide an assessment of contaminant levels in wetlands.

Figure 8.11 U.S. NPL and Other Superfund Sites, 1980-1997



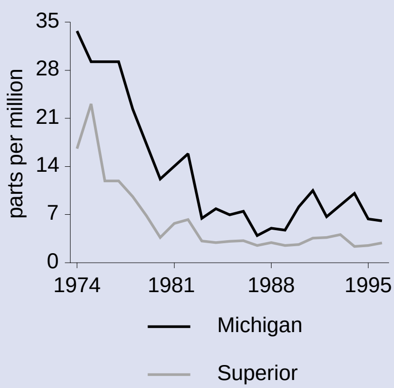
Source: See Part III, Table 8.9.
Note: * >24,000 low-priority sites removed under EPA's Brownfields initiatives. NPL = National Priorities List.

Figure 8.12 PCB Levels in Herring Gull Eggs, 1974-1996



Source: See Part III, Table 8.10.
Note: PCB = Polychlorinated biphenyls.

Figure 8.13 DDE Levels in Herring Gull Eggs, 1974-1996



Source: See Part III, Table 8.10.
Note: DDE = Derivative of Dichlorodiphenyl trichloroethane (DDT).

Over the last several decades, the use of persistent contaminants such as DDT and PCBs was greatly curtailed, and concentrations in fish and wildlife declined. For example, over the 1974-96 period, contaminant levels have generally declined, as measured by contaminant levels in herring gull eggs from colonies on the Great Lakes. In Lake Superior, PCBs in herring gull eggs were measured at 76.24 parts per million (ppm) in 1975; by 1996, the level had dropped to 12.60 ppm (Figure 8.12). Around Lake Michigan, DDE levels were measured at 33.4 ppm in 1976, and have since declined to 6.10 ppm in 1996 (Figure 8.13). Downward trends have been generally similar in other Great Lakes colonies and for other chemicals, including dieldrin, mirex, and HCB. (Part III, Table 8.10)

Although overall concentrations have declined, residues of these contaminants remain widespread, and fish consumption advisories remain in effect for some waters. In the United States, concentrations of DDT (mostly as DDE) remain highest in fish and wildlife from areas in the South, Southwest, and Northwest, where DDT was used to protect cotton and orchards from insects; in the Northeast, where it was used to control mosquitos; and near former centers of DDT production and formulation, such as northern Alabama and the Arkansas, Tombigbee, Alabama, and Tennessee rivers.

Concentrations of other persistent insecticides that are no longer in widespread use, such as heptachlor, endrin, and chlordane, have also declined. PCBs were used historically as lubricants, hydraulic fluids, and fire retardants; as heat transfer agents in electrical equipment, including fluorescent light ballasts; and as a component of carbonless copy papers. Large quantities were discharged directly to waterways, including the Great Lakes and the Hudson, Mississippi, Kanawha, and Ohio rivers before such practice was banned. Today, the greatest concentrations persist in fish and wildlife in the urban-industrial regions of the Midwest and Northeast.

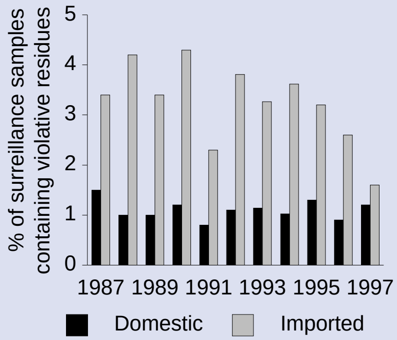
Concentrations of mercury in fish declined significantly from 1969 through 1974 as a result of restrictions on historical sources (e.g., chemical facilities that manufactured caustic soda (sodium hydroxide), paper mills, gold and silver mines, and the production and use of mercury-containing pesticides), but concentrations have not changed appreciably since 1974. Recent findings have highlighted the importance of atmospheric transport and the accumulation of mercury in natural sinks, such as Lake Champlain and the Everglades, in the maintenance of elevated concentrations.

Pesticide Residues in U.S. Domestic Food Samples

Some commodity groups have substantially reduced pesticide residues over the 1978-97 period, while others have showed a more variable pattern.

Milk, dairy products, and eggs have improved steadily during this period, rising from 57 percent of surveillance samples with no residues in 1978 to 97 percent of samples with no residues in 1997. Fish, shellfish, and meats also have improved to 68 percent of samples with no residues in 1997, compared to 20 percent in 1978. For other groups, including grains, fruits, and vegetables, there is no clear trend; residues have been found in about 40 percent of samples as a general rule.

Figure 8.14 Pesticide Violations in Food Samples, 1987-1997



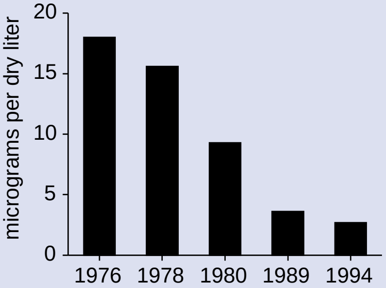
Source: See Part III, Table 8.11.

Taken as a whole, the percentage of surveillance samples without pesticide residues increased from 53 to 66 percent over the 1978-97 period. (Part III, Table 8.11) Of those surveillance food samples containing pesticide residues, only 1.2 percent of domestic foods and 1.6 percent of imported foods exceeded tolerance levels in 1997 (Figure 8.14). The corresponding violation rates in compliance samples were higher than those for surveillance samples: 6.9 percent for domestic and 10.1 percent for imports. (Compliance samples are collected when a pesticide residue problem is known or suspected whereas surveillance samples are random; that is, there is no prior knowledge or evidence that a specific food shipment contains illegal pesticide residues.)

Lead

In the United States, children's mean blood lead levels have decreased more

Figure 8.15 Blood Lead Levels in Children 1-5 Years of Age, 1976-1994



Source: Centers for Disease Control and Prevention, National Health and Nutrition Survey (NHANES). *Update: Blood Lead Levels -- United States, 1991-1994*. MMWR 46(07): 141-146 (GPO, Washington, DC, 1997).
Note: Data shown for 1994 are for the period 1991-1994.

than 75 percent since the 1970s (Figure 8.15). The reduction is primarily the result of the phaseout of lead in gasoline and reductions in other sources and pathways of exposure, such as lead in soldered cans and paint. With the reduction of lead in gasoline and foods, the remaining major sources of lead are lead-based paint, dust and soil, plumbing fixtures and fittings, and occupational exposures.

Lead-based paint is the largest source of high-dose lead exposure for children. About 1.7 million children still have blood lead levels above 10 micrograms per deciliter, the accepted level set by the Centers for Disease Control and Prevention. Although lead was banned from residential paint in 1978, it is estimated that 83 percent of all housing units built before 1980 contain some lead-based paint.

Under the Toxic Substances Control Act and the Residential Lead-Based Paint Hazard Reduction Act of 1992, many new rules have been developed to help reduce lead exposures. These rules include lead hazard identification programs, lead disclosure and consumer education, and renovation and remodeling procedures to help reduce lead exposures.

ONLINE RESOURCES

U.S. EPA's Office of Pollution Prevention and Toxics (http://www.epa.gov/opptintr/) provides abundant material on pollution prevention. The home page has seven broad categories that users can click on to link to sites that provide more in-depth information on topical areas in each category.

The site includes a description of the Pollution Prevention Act of 1990, which made pollution prevention the national environmental policy of the United States. The site also provides additional information on case studies, technical assistance programs, grants, *Federal Register* notices, and the current edition of the *P2 News* newsletter.

EPA also maintains a Pollution Prevention Information Clearinghouse (PPIC) (http://www.epa.gov/opptintr/p2home). PPIC answers questions and distributes selected EPA documents, information packets, and fact sheets on pollution prevention free of charge. A conference list provides details and contact information for many pollution prevention conferences, workshops, and training opportunities for the current quarter. Documents can be ordered by phone (202-260-0178) or e-mail (ppic@epamail.gov)

Many EPA programs include pollution prevention as an important focus and are described at EPA's home page (http://www.epa.gov/epahome/media.htm). The waste prevention program provides examples of how source reduction efforts benefit business and industry. The WasteWi$e program is a voluntary program that targets the reduction of municipal solid waste.

Enviroene, another part of U.S. EPA's website, provides a single repository for pollution prevention, compliance assurance, and enforcement information and databases (http://es.epa.gov). Partners for the Environment (http://es.epa.gov/partners), which is part of the Enviroene site, is a useful guide to the many EPA partnership programs with pollution prevention themes.

The Design for the Environment program (DfE) helps businesses incorporate environmental considerations into the design and redesign of products, processes, and technical and management systems. Initiated by EPA's Office of Pollution Prevention and Toxics in 1992, DfE helps businesses evaluate and compare the performance, cost, pollution prevention benefits, and the human health and environmental risk associated with existing and alternative technologies. The DfE web site (http://www.epa.gov/dfe) provides a broad overview of the DfE program as well as information about publications from the individual projects and programs that operate within DfE.

In partnership with the scientific community and the chemical industry, EPA's Green Chemistry program promotes research, development, and implementation of innovative green chemistry technologies that reduce or eliminate the use or generation of hazardous substances in chemical design, manufacture, and use. Information on the program—including research opportunities, education activities, international initiatives, outreach activities, and tool development—is online (http://www.epa.gov/greenchemistry).

Another EPA site (http://www.epa.gov/opptintr/lead) is devoted to reducing lead poisoning in children. Included in the site are reports on scientific and technical studies on lead, listed by name, and in some cases the executive summary or the full report (or both) are accessible and downloadable from the web page. A list of fact sheets, many with information about lead regulations and standards, is also available (http://www.epa.gov/opptintr/facts.htm), as is a site with materials that can help families find out more about lead in their homes (http://www.epa.gov/opptintr/opptcon.htm). These reports or documents also can be obtained by calling the National Lead Information Center (http://www.epa.gov/lead/nlic.htm) at 1-800-424-LEAD.

EPA's Waste Reduction Resource Center, based in Raleigh, North Carolina, was established in 1988 to provide multimedia waste reduction support for the eight states of EPA Region IV and, since1994, EPA Region III. The site (http://wrre.p2pays.org/) includes a directory of markets for recyclable materials and a vendor database.

Pollution Prevention by Design is an integrated set of tools to help engineers, designers, and planners incorporate pollution prevention strategies into the design stage for new products, processes, and facilities. The project was developed by the Department of Energy's Office of Pollution Prevention and is managed by the Pacific Northwest National Laboratory (http://terrassa.pnl.gov:2080/DFE).

The DOE Pollution Prevention Information Clearinghouse (EPIC) provides up-to-date resources for DOE sites (http://epic.er.doe.gov/epic/). EPIC contains information on pollution prevention policy, successful projects, affirmative procurement, materials exchange and reuse, sustainable design, and awards programs.

State Sites

Many state governments provide valuable online information about pollution prevention. For example, in Michigan the Department of Environmental Quality's Pollution Prevention home page (http://www.deq.state.mi.us/ead/p2sect) offers Michigan businesses, institutions, and environmental groups online access to information on source reduction and recycling. This site includes information on the Great Printers Project, one of the more innovative and comprehensive pollution prevention projects in the nation that attempts to comprehensively reduce pollution in the entire printing process.

In Virginia, the Virginia Department of Environmental Quality's Office of Pollution Prevention (http://www.deq.state.va.us/opp/opp.html) provides technical assistance and materials to industry, governments, academia, non-profits and the general public on how to prevent pollution. The site includes a pollution prevention library with over 2,000 documents.

Global Links

New Ideas in Pollution Prevention, sponsored by the World Bank (http://www.worldbank.org/nipr), is a site for researchers, government officials, and citizens interested in understanding and improving control of industrial pollution, especially in developing countries. It publishes materials produced by the World Bank's Economics of Industrial Pollution Control Research Project. The primary themes of the project include: incentives and behavior, including why polluters behave as they do; the role of the community, including how public information and informal regulation can modify polluting behavior; and the impact of the market, including the implications of market actions on pollution.

The site includes a section on how geographic information systems can be used to explain and improve pollution analysis, a guide to environmental agencies of the world, and a guide to the Internet's best environmental sites, focusing on pollution-related topics.

The United Nations Industrial Development Organization (UNIDO) (http://www.unido.org) includes sections on cleaner production information and an "industrial environment learning kit."

The Canadian Centre for Pollution Prevention (http://c2p2.sarnia.com) is a particularly valuable site. The Centre operates through contracts with Environment Canada's national regional offices as well as with support from provincial governments and businesses.

The Centre's Internet Guide provides links to a long list of businesses, associations, national governments, and NGOs. It also has numerous subject guides, including energy efficiency, accounting, agriculture, chemical management, construction, dry cleaning, electronics, health, metal finishing, and mining.

The Centre also organizes the annual Canadian Pollution Prevention Roundtable, which enables governments, industries, and public and community groups to share experiences.

Other Links

Pollution prevention is not widely taught in colleges. To encourage colleges to add this subject to their curriculum, the National Pollution Prevention Center for Higher Education at the University of Michigan (http://www.umich.edu/~nppcpub/info.html) develops pollution prevention educational materials for university instructional faculty. These materials help faculty incorporate the principles of pollution prevention into existing or new courses.

The National Pollution Prevention Roundtable (http://www.p2.org) is the largest membership organization in the United States devoted solely to pollution prevention. The mission of the Roundtable is to provide a national forum for promoting the development, implementation, and evaluation of efforts to avoid, eliminate, or reduce pollution at the source.

The American Institute for Pollution Prevention (AIPP) (http://es.epa.gov/aipp) is an educational non-profit organization whose members are about 30 large trade associations and professional societies, including the Aerospace Industries Association, American Academy of Environmental Engineers, American Chemical Society, American Institute of Chemical Engineers, Edison Electric Institute, and National Association of Manufacturers.

Through a cooperative agreement with EPA, AIPP constructed and maintains the first and only database containing descriptions of over 75 trade groups and professional societies and their pollution prevention programs. The electronic version of the directory on AIPP's web site contains search capabilities so that visitors can quickly find information about pollution prevention practices. The directory also contains links to many of the organizations as well as staff contacts.

SELECTED RESOURCES

Solid Waste

Council on Environmental Quality and the U.S. Postal Service, *Recycling: Looking Toward the Next Century,* FINAL Workshop Summary (White House Conference Center, Washington, DC, May 19-21, 1998) (http://www.ofee.gov/html/recycle.htm)

U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, *Characterization of Municipal Solid Waste in the United States: 1997* (EPA, Washington, DC, 1998). (http://www.epa.gov/epaoswer/non-hw/muncpl/msw97.htm)

Nuclear Waste

U.S. Department of Energy, Office of Environmental Management, *Integrated Data Base Report - 1996: U.S. Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics*, Revision 13 (DOE, EM, Washington, DC, 1997). (http://www.em.doe.gov/idb97/index.html)

Toxics

Schmitt, C.J. and C.M. Bunck. "Persistent Environmental Contaminants in Fish and Wildlife" in U.S. Department of the Interior, National Biological Service, *Our Living Resources* (GPO, Washington, DC, 1995). (http://biology.usgs.gov/s+t/index.htm)

U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics, *1996 Toxics Release Inventory: Public Data Release* (EPA, Washington, DC, 1998). (http://www.epa.gov/opptintr/tri/tri97/access.htm)

Superfund Inventory

U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, *Superfund Clean-up Figures* (EPA, Washington, DC, 1998). (http://www.epa.gov/superfund/whatissf/mgmtrpt.htm)

Pesticide Residues

Food and Drug Administration, *Pesticide Program Residues Monitoring, 1997* (FDA, Washington, DC, 1998), and earlier annual reports. (http://vm.cfsan.fda.gov/~dms/pesrpts.html)

Pollution Prevention

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CORE DATA

Table 8.1 U.S. Municipal Solid Waste Trends, 1960-1996

Table 8.2 U.S. Municipal Solid Waste Trends by Waste Type, 1960-1996

Table 8.3 U.S. Inventory of Low-level Nuclear Waste, 1965-1997

Table 8.4 U.S. Inventory of High-level Nuclear Waste, 1980-1997

Table 8.5 U.S. Inventory of Spent Nuclear Fuel by Reactor Type, 1971-1996

Table 8.6 U.S. Toxics Release Inventory Releases and Transfers, 1988 and 1994-1996

Table 8.7 U.S. Toxics Release Inventory On-site and Off-site Releases by Industry, 1988 and 1994-1996

Table 8.8 U.S. Toxics Release Inventory On-site and Off-site Releases by State, 1988 and 1994-1996

Table 8.9 U.S. Superfund Inventory and NPL Sites, 1980-1997

Table 8.10 Contaminant Levels in Herring Gull Eggs from Great Lakes Colonies, 1974-1996

Table 8.11 Pesticide Residues in U.S. Domestic Surveillance Food Samples by Commodity Group, 1978-1997

Table 8.12 U.S. Production of Selected Ozone-depleting Chemicals, 1958-1994